AMENDMENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Original): A method of operating a robot cleaner comprising:

cleaning a region in a room with a robot cleaner;

mapping the region in a first internal map; and

using the first internal map to produce a second internal map of lower resolution.

2. (Original): The method of claim 1, wherein the first internal map is a subgrid map.

3. (Original) The method of claim 2, wherein the subgrid map is cleaned in a serpentine clean.

4. (Original) The method of claim 1, wherein at least one of the first and second internal maps is composed of cells.

5. (Original) The method of claim 4, wherein the cells are marked as obstacle, cleaned or uncleaned.

6. (Original) The method of claim 4, wherein the first internal map is composed of cells and a width of a cell corresponds to portion of effective cleaning unit width of the robot cleaner.

7. (Original) The method of claim 1, wherein the first internal map is composed of cells and wherein a cell can be set cleaned with a single straight line path segment of robot cleaner.

8. (Original) The method of claim 1, wherein the second internal map is a room map.

9. (Original): The method of claim 1, wherein the first internal map contains information about the region being cleaned.

10. (Original): The method of claim 9, wherein information of the first internal map is cleared after the region is cleaned.

11. (Original): The method of claim 9, wherein a new internal map is prepared for the next region being cleaned.

12. (Original): A robot cleaner comprising:

a cleaning unit on the robot cleaner; and

a processor adapted to control a robot cleaner to clean a region of a room, the processor adapted to map the region in a first internal map, the processor adapted to use the first internal map to produce a second internal map of lower resolution.

13. (Original): The robot cleaner of claim 12, wherein the first internal map is a subgrid map.

14. (Original): The robot cleaner of claim 13, wherein the subgrid map is cleaned in a serpentine clean.

15. (Original): The robot cleaner of claim 12, wherein at least one of the first and second internal maps is composed of cells.

16. (Original): The robot cleaner of claim 15, wherein the cells are marked as obstacle, cleaned or uncleaned.

17. (Original): The robot cleaner of claim 12, wherein the first internal map is composed of cells and a width of a cell corresponds to portion of effective cleaning unit width of the robot cleaner.

18. (Original): The robot cleaner of claim 12, wherein the first internal map is composed of cells and wherein a cell can be set cleaned with a single straight line path segment of robot cleaner.

19. (Original): The robot cleaner of claim 12, wherein the second internal map is a room map.

20. (Original): The robot cleaner of claim 12, wherein the first internal map contains information about the region being cleaned.

21. (Original): The robot cleaner of claim 20, wherein information of the first internal map is cleared after the region is cleaned.

22. (Original): The robot cleaner of claim 20, wherein a new internal map is prepared for the next region being cleaned.

23. (Original): A method of operating a robot cleaner comprising:

determining a subgrid of predetermined dimensions within a room;

cleaning in a serpentine pattern within the subgrid; and

determining another subgrid of predetermined dimensions within the room to clean in a serpentine pattern.

24. (Original): The method of claim 23, wherein the serpentine pattern includes straight line path segments.

25. (Original): The method of claim 24, wherein the robot cleaner rotates in place in between straight line path segments.

26. (Original): The method of claim 24, wherein the straight line path segments include parallel path segments that result in cleaning overlap.

27. (Original): The method of claim 24, wherein when the robot cleaner gets to an obstacle, the robot cleaner starts the next path segment.

28. (Original): The method of claim 27, wherein the obstacle can result in an uncleaned region in the subgrid after a first pass and wherein the robot cleaner cleans the uncleaned region in the subgrid.

29. (Original): The method of claim 28, wherein the robot cleaner does another serpentine pattern cleaning within the uncleaned region.

30.(Currently amended): The method of claim [[N6]] 28, wherein the robot cleaner does another serpentine pattern cleaning of the subgrid from a different orientation.

31. (Original): The method of claim 23, wherein the robot uses an internal map.

32. (Original): The method of claim 31, wherein the internal map is composed of cells.

33. (Original): The method of claim 32, wherein the cells are marked as obstacle, cleaned or uncleaned.

34. (Original): The method of claim 31, wherein an internal map is a subgrid map.

35. (Original): The method of claim 34, wherein the subgrid map is used to update a room map.

36. (Original): The method of claim 35, wherein the room map has a lower resolution than the subgrid map.

37. (Original): The method of claim 23, wherein the robot cleaner keeps track of position.

38. (Original): The method of claim 23, wherein the robot cleaner cleans subgrids until the room is cleaned.

39. (Original): A robot cleaner comprising:

a cleaning unit on the robot cleaner; and

a processor adapted to determine a subgrid of predetermined dimensions within a room, the processor adapted to control the robot cleaner to clean with the cleaning unit in a serpentine pattern within the subgrid, the processor adapted to determine a second subgrid of predetermined dimensions within the room to clean with the cleaning unit in a serpentine pattern.

40. (Original): The robot cleaner of claim 39, wherein the serpentine pattern includes straight line path segments.

41. (Original): The robot cleaner of claim 40, wherein the robot cleaner rotates in place in between straight line path segments.

42. (Original): The robot cleaner of claim 40, wherein the straight line path segments include parallel path segments that result in cleaning overlap.

43. (Original): The robot cleaner of claim 40, wherein when the robot cleaner gets to an obstacle, the robot cleaner starts the next path segment.

44. (Original): The robot cleaner of claim 43, wherein the obstacle can result in an uncleaned region in the subgrid after a first pass and wherein the robot cleaner cleans the uncleaned region in the subgrid.

45. (Original): The robot cleaner of claim 44, wherein the robot cleaner does another serpentine pattern cleaning within the uncleaned region.

46. (Original): The robot cleaner of claim 44, wherein the robot cleaner does another serpentine pattern cleaning of the subgrid from a different orientation.

47. (Original): The robot cleaner of claim 23, wherein the robot uses an internal map.

48. (Original): The robot cleaner of claim 47, wherein the internal map is composed of cells.

49. (Original): The robot cleaner of claim 48, wherein the cells are marked as obstacle, cleaned or uncleaned.

50. (Original): The robot cleaner of claim 47, wherein the internal map is a subgrid map.

51. (Original): The robot cleaner of claim 34, wherein the subgrid map is used to update a room map.

52. (Original): The robot cleaner of claim 35, wherein the room map has a lower resolution than the subgrid map.

53. (Original): The robot cleaner of claim 23, wherein the robot cleaner keeps track of position.

54. (Original): The robot cleaner of claim 23, wherein the robot cleaner cleans subgrids until the room is cleaned.

55. (Original): A method of operating a robot cleaner comprising:

determining a subgrid of predetermined dimensions within a room, the subgrid being a rectangular region longer and wider than the robot cleaner;

cleaning the subgrid with the robot cleaner; and

determining another subgrid of predetermined dimensions within the room to clean.

56. (Original): The method of claim 55, wherein the robot cleaner cleans the subgrid in a serpentine pattern.

57. (Original): The method of claim 56, wherein the serpentine pattern includes straight line path segments.

58. (Original): The method of claim 57, wherein the straight line path segments include parallel path segments that result in cleaning overlap.

59. (Original): The method of claim 57, wherein when the robot cleaner gets to an obstacle, the robot cleaner starts the next path segment.

60. (Original): The method of claim 55, wherein the obstacle can result in an uncleaned region in the subgrid after a first pass and wherein the robot cleaner cleans the uncleaned region in the subgrid.

61. (Original): The method of claim 55, wherein the robot uses an internal map.

62. (Original): The method of claim 61, wherein the internal map is composed of cells.

63. (Original): The method of claim 62, wherein the cells are marked as obstacle, cleaned or uncleaned.

64. (Original): The method of claim 61, wherein the internal map is a subgrid map.

65. (Original): The method of claim 64, wherein the subgrid map is used to update a room map.

66. (Original): The method of claim 65, wherein the room map has a lower resolution than the subgrid map.

67. (Original): The method of claim 55, wherein the robot cleaner keeps track of position.

68. (Original): The method of claim 55, wherein the robot cleaner cleans subgrids until the room is cleaned.

69. (Original): The method of claim 55 wherein the robot cleaner cleans the region using straight line path segments.

70. (Original): A robot cleaner comprising:

a cleaning unit on the robot cleaner; and

a processor adapted to determine a subgrid of predetermined dimensions within a room, the subgrid being a rectangular region longer and wider than the robot cleaner, the processor adapted to control the robot cleaner to clean the subgrid with the cleaning unit, the processor

adapted to determine a second subgrid of predetermined dimensions within the room to clean with the cleaning unit.

71. (Original): The robot cleaner of claim 70, wherein the robot cleaner cleans the subgrid in a serpentine pattern.

72. (Original): The robot cleaner of claim 71, wherein the serpentine pattern includes straight line path segments.

73. (Original): The robot cleaner of claim 72, wherein the straight line path segments include parallel path segments that result in cleaning overlap.

74. (Original): The robot cleaner of claim 72, wherein when the robot cleaner gets to an obstacle, the robot cleaner starts the next path segment.

75. (Original): The robot cleaner of claim 70, wherein the obstacle can result in an uncleaned region in the subgrid after a first pass and wherein the robot cleaner cleans the uncleaned region in the subgrid.

76. (Original): The robot cleaner of claim 70, wherein the robot uses an internal map.

77. (Original): The robot cleaner of claim 77, wherein the internal map is composed of cells.

78. (Original): The robot cleaner of claim 76, wherein the cells are marked as obstacle, cleaned or uncleaned.

79. (Original): The robot cleaner of claim 79, wherein the internal map is a subgrid map.

80. (Original): The robot cleaner of claim 80, wherein the subgrid map is used to update a room map.

81. (Original): The robot cleaner of claim 70, wherein the room map has a lower resolution than the subgrid map.

82. (Original): The robot cleaner of claim 70, wherein the robot cleaner keeps track of position.

83. (Original): The robot cleaner of claim 70, wherein the robot cleaner cleans subgrids until the room is cleaned.

84. (Original): The robot cleaner of claim 70, wherein the robot cleaner cleans the region using straight line path segments.

85. (Original): A method of operating a robot cleaner comprising:

cleaning a floor surface with a robot cleaner; and

mapping a limited region about the robot cleaner in an internal map as the robot cleaner cleans; the limited region being less than a room.

86. (Original): The method of claim 85, wherein at least one of the internal map is composed of cells.

87. (Original): The method of claim 85, wherein obstacles are marked in the internal map.

88. (Original): The method of claim 87, wherein the internal map is used to avoid obstacles.

89. (Original): The method of claim 85, wherein the limited region is defined by a period of time for which data is stored in the internal map.

90. (Original): The method of claim 85, wherein the limited region is defined by a distance from the robot cleaner is stored in the internal map.

91. (Original): A robot cleaner comprising:

a cleaning unit on the robot cleaner; and

a processor controlling a robot cleaner to clean a floor surface, the processor mapping a limited region about the robot cleaner in an internal map as the robot cleaner cleans; the limited region being less than a room.

92. (Original): The robot cleaner of claim 91, wherein at least one of the internal map is composed of cells.

93. (Original): The robot cleaner of claim 91, wherein obstacles are marked in the internal map.

94. (Original): The robot cleaner of claim 93, wherein the internal map is used to avoid obstacles.

95. (Original): The robot cleaner of claim 91, wherein the limited region is defined by a period of time for which data is stored in the internal map.

96. (Original): The robot cleaner of claim 91, wherein the limited region is defined by a distance from the robot cleaner is stored in the internal map.

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be acceptable.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: October 5, 2004

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